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09/837,936	04/19/2001	Dmitri Loguinov	010209	8317

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EXAMINER

POLLACK, MELVIN H

ART UNIT PAPER NUMBER

2145

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/837,936

Applicant(s)

LOGUINOV ET AL.

Examiner

Melvin H. Pollack

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: see attached office action.

DETAILED ACTION

New Examiner

1. This case has been transferred to a new examiner. Contact information for the new examiner is provided below.

Response to Arguments

2. Applicant's arguments filed 07 November 2005 have been fully considered but they are not persuasive. An analysis of the arguments is provided below.
3. The claim objections and 112 rejections have been withdrawn in light of the amendment and remarks.
4. The applicant argues that Sisalem does not expressly disclose filtering out bandwidth samples from said set of bandwidth samples (P. 14, lines 1-2), let alone based on at least one characteristic of said received bursts, selected ones of said bandwidth samples (P. 16, lines 12-17). From the specification, bandwidth spaces are computed based on interpacket spacing, and are used to estimate bandwidth. Therefore, Sisalem's method of filtering out incorrect estimates of the bottleneck bandwidth by clustering similar estimates into intervals (P. 18, lines 8-12) would clearly fulfill this method, as certain bandwidth samples (incorrect estimates) are filtered out. As the above shows, said filtering results from clustering, and filtering out bandwidth samples that aren't in the cluster representing the average (i.e. bandwidth samples of sufficient deviation). Since clustering occurs due to at least one characteristic of said received bursts, this limitation is fulfilled.

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5. Sisalem also teaches filtering triggers of other types, including consideration for dropped packets (Sections 3.3 and 4.1), and consideration of age of bandwidth samples (P. 8, lines 16-23).

6. A similar teaching is provided in Derby, which follows a similar analytical process. "The measured effective mean burst length and mean bit rates are then filtered to ensure that the filtered values are statistically reliable... (col. 2, lines 39-41)." In other words, a functional equivalent for bandwidth samples, as currently defined, is filtered in a method similar to Sisalem and for similar reasons.

7. Therefore, the rejection is maintained for the reasons above, and made final.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 2, 5, 6, 9, 10, 12-15, 18, 21-24, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sisalem (Loss-Delay Adjustment Article) in view of Derby et al. (5,359,593).

10. For claims 1, 12, 23, Sisalem teaches a method and system (abstract) for estimating a bottleneck bandwidth used to support estimation of the bottleneck bandwidth (Introduction) between a server and a client in a communication system (Fig. 1), the method comprising the steps of:

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- a. Receiving at said client from said server a plurality of bursts comprised of packets (P. 5, section 3.1, esp. lines 28-34) transmitted from said server via a bottleneck link of said system (section 4.1);
 - b. Computing a set of bandwidth samples from each of said bursts received by said client (P. 6, lines 3-14), wherein said bandwidth samples are computed based on an inter-packet spacing between a two packets within each of said bursts (bottleneck bandwidth spacing);
 - c. Filtering out bandwidth samples from said set of bandwidth samples based on at least one characteristic of said received bursts, selected ones of said bandwidth samples (P. 6, lines 22-25); and
 - d. Determining a new bottleneck bandwidth from said filtered computed bandwidth samples, for transmission of subsequent data packets from said server to said client (P. 5, lines 11-16).
11. Sisalem does not expressly disclose a plurality of bursts comprised of at least three packets, nor computing bandwidth samples based on spacing between a first and last packet, but does disclose multiplicity of packets (P. 6, lines 15-21) and measurement between points (P. 8, lines 16-23). Derby teaches a dynamic bandwidth estimation method and system (abstract) for packet communications networks having steps of receiving at a client a plurality of bursts (col. 1, line 1 – col. 2, line 67) comprised of a series of large data packets [at least three packets] transmitted from said server via bottleneck link of the communication networks (Fig. 7 in view of col. 18, lines 21-24 and col. 19, lines 40-44); computing a set of bandwidth samples based on an inter-packet spacing between the first and the last packet within each of said bursts (col. 7,

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line 67 – col. 8, line 11); filtering from said set of bandwidth samples (col. 6, lines 58-67 in view of col. 18, lines 50-53), and determining a new bottleneck bandwidth (Fig. 4).

12. At the time the invention was made, one of ordinary skill in the art would have added Derby's dynamic bandwidth estimation methods in order to enhance QoS control methods (Sisalem; abstract). In large multicast groups in a heterogeneous environment, a "race to the bottom" can occur so that one poorly connected receiver determines the quality for the much larger number of well-connected receivers (Sisalem, P. 3, lines 1-8). Derby solves this problem by handling computed burst length samples and filtering same to insure that the filtered values are statistically reliable (Derby, col. 2, lines 38-41).

13. For claims 2, 24, Sisalem teaches the method further comprising maintaining a bandwidth sample lifetime, wherein the step of filtering comprises the step of filtering bandwidth samples that have a sample life time greater than a threshold bandwidth lifetime (P. 6, lines 8-25 in view of P. 8, lines 16-23).

14. For claims 5, 18, 26, Sisalem teaches determining to reject a set of bandwidth samples by rejecting bandwidth samples having a retransmitted packet (P. 6, lines 15-25).

15. For claim 6, Sisalem teaches that the plurality of said packet bursts is transmitted at a maximum speed by said server system so that the inter-packet spacing is introduced in each of said bursts (P. 9, section 4.1).

16. For claims 9, 21, Sisalem teaches that the said new bandwidth corresponds to a minimum bandwidth of said computed bandwidth samples if a multi-channel link is deployed between said server and said client (P. 8, lines 5-23).

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17. For claims 10, 22, Sisalem teaches determining to reject a set of bandwidth samples by rejecting bandwidth samples having a missing packet within a corresponding one of said bursts (P. 6, lines 8-25).

18. For claim 13, Sisalem teaches that the step of computing said bandwidth samples comprises the steps of determining the start time and the end time of the reception of the first and the last packet within each of said bursts, but does not expressly disclose usage of packet size. Derby teaches determining the packet size of the second packet and the last packet for each of said bursts (Fig. 4), and computing said bandwidth samples based on a difference between the packet size of the second packet and the last packet, divided by an inter-packet spacing duration between the first and the last packet within each of said bursts (col. 7, line 67 – col. 8, line 11). At the time the invention was made, one of ordinary skill in the art would have added Derby's dynamic bandwidth estimation methods in order to enhance QoS control methods (Sisalem; abstract). In large multicast groups in a heterogeneous environment, a "race to the bottom" can occur so that one poorly connected receiver determines the quality for the much larger number of well-connected receivers (Sisalem, P. 3, lines 1-8). Derby solves this problem by handling computed burst length samples and filtering same to insure that the filtered values are statistically reliable (Derby, col. 2, lines 38-41).

19. For claim 14, Sisalem teaches that the plurality of said packet bursts is transmitted at a maximum rate by said server system so that the inter-packet spacing is introduced in each of said bursts (P. 9, section 4.1).

20. For claim 15, Sisalem teaches that the step of filtering said computed bandwidth samples comprises the step of filtering bandwidth samples having a sample life time greater than a

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threshold bandwidth lifetime (P. 6, lines 8 – 25; rejection of packets when SEQ > sequence number).

21. For claim 27, Sisalem does not expressly disclose rejecting bandwidth samples having a missing packet. Derby teaches this limitation (col. 7, line 67 – col. 8, line 11 in view of col. 20, lines 8-18). At the time the invention was made, one of ordinary skill in the art would have added Derby's dynamic bandwidth estimation methods in order to enhance QoS control methods (Sisalem; abstract). In large multicast groups in a heterogeneous environment, a "race to the bottom" can occur so that one poorly connected receiver determines the quality for the much larger number of well-connected receivers (Sisalem, P. 3, lines 1-8). Derby solves this problem by handling computed burst length samples and filtering same to insure that the filtered values are statistically reliable (Derby, col. 2, lines 38-41).

22. Claims 3, 4, 7, 8, 16, 17, 19, 20, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sisalem and Derby as applied to claims 1, 12, and 23 above, and further in view of Berthaud (5,815,492).

23. For claims 3, 16, 25, Sisalem in view of Derby does not expressly disclose filtering bandwidth samples encountering an operating system (OS) delay of said client system. Berthaud teaches a method and system (abstract) of filtering samples from said computed bandwidth samples (col. 1, line 1 – col. 5, line 45) by rejecting bandwidth samples encountering an operating system (OS) delay of said client system (discarding of packets not conforming to the initially provided statistical reliable), given that packet samples encountering OS delay are statistically unreliable and are therefore filtered from the estimation for that reason (col. 3, lines

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8-18 in view of col. 9, lines 3-34). At the time the invention was made, one of ordinary skill in the art would have added Berthaud's OS delay filtering mechanism to Sisalem and Derby in order to further increase the rejection of samples that act as "noise" and therefore may cause the estimation to be statistically unreliable (abstract), since, in order to successfully control traffic access, it is necessary to accurately characterize the traffic so as to provide appropriate bandwidth for traffic carrying (col. 3, lines 8-18).

24. For claims 4, 17, Sisalem in view of Derby does not expressly disclose that the bandwidth samples encountering said OS delay is determined based on a quantity difference between an ideal burst duration prior to encountering said OS delay and an actual burst duration after encountering said OS delay. Berthaud teaches this limitation (col. 9, lines 3-34). At the time the invention was made, one of ordinary skill in the art would have added Berthaud's OS delay filtering mechanism to Sisalem and Derby in order to further increase the rejection of samples that act as "noise" and therefore may cause the estimation to be statistically unreliable (abstract), since, in order to successfully control traffic access, it is necessary to accurately characterize the traffic so as to provide appropriate bandwidth for traffic carrying (col. 3, lines 8-18).

25. For claims 7, 19, Sisalem in view of Derby does not expressly disclose that said new bandwidth corresponds to a median value of said computed bandwidth samples for a low speed link. Berthaud teaches this limitation (col. 9, lines 5-34 in view of col. 13, line 45 – col. 14, line 18). At the time the invention was made, one of ordinary skill in the art would have added Berthaud's OS delay filtering mechanism to Sisalem and Derby in order to further increase the rejection of samples that act as "noise" and therefore may cause the estimation to be statistically

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unreliable (abstract), since, in order to successfully control traffic access, it is necessary to accurately characterize the traffic so as to provide appropriate bandwidth for traffic carrying (col. 3, lines 8-18).

26. For claims 8, 20, Sisalem in view of Derby does not expressly disclose that said new bandwidth corresponds to the statistical mode of said computed bandwidth samples for a high speed link. Berthaud teaches this limitation (col. 13, line 46 – col. 14, line 18).

Claim Objections

27. Claim 1 is objected to because of the following informalities: The last limitation states “determining a new bottleneck bandwidth from said unfiltered computed bandwidth samples.” The examiner assumes from the specification and from the previous set of claims that this limitation should be “determining... from said filtered... samples.” Appropriate correction is required.

Conclusion

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. They regard further teachings of Sisalem and further teachings of the inventive entity.

29. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

30. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin H. Pollack whose telephone number is (571) 272-3887. The examiner can normally be reached on 8:00-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on (571) 272-3933. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MHP
10 February 2006


JASON CARDONE
SUPERVISORY PATENT EXAMINER